

REMARKS

During preparation of this response, it was discovered that the specification as filed inadvertently contains a different title than the title listed in other application documents as filed. Therefore, please amend the current application by changing the title of the application to "METHOD AND APPARATUS FOR DEFECT DETECTION IN OPTICAL DISC DRIVES" to correct this inconsistency.

Examiner

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Komazaki et al. (5,841,751) (hereinafter Komazaki).

Response

Komazaki disclose the creation of a binary mirror signal representing the arrangement of pits and lands on an optical disc and is used for, among other purposes, counting the number of tracks crossed by the light radiated by the optical pickup in an optical disc drive (Col.1, lines 47-57). For accuracy in the mirror signal, it is necessary to accurately recognize the center value of the analog traverse signal from which the mirror signal originates. In order to recognize the center value with a high degree of accuracy, the peak and the bottom of the traverse signal are held to produce a top hold signal and a bottom hold signal respectively as shown in FIG. 7 (Col.1, line 60 - Col.2, line 3).

When the level of the playback signal output by the optical pickup changes abruptly due to an injury on the optical disk, the level of the traverse signal also changes abruptly, accompanying the abrupt change in playback-signal level as shown in FIG. 9 (Col.3, lines 16-21). As a result, there arises a problem that an accurate mirror signal can not be obtained not only during the period of the defect occurring in the playback signal but also during a period following the defect period as shown by notation T in the figure (Col.3, lines 31-35).

Because a capacitor is used for holding the traverse signal, when a defect occurs in the playback signal, the traverse signal is unable to follow the playback signal resulting in the inability to obtain an accurate mirror signal (Col.3. lines 37-57) during the period of the defect and also during a period following the defect period as shown by notation T in FIG. 9 (Col.3. lines 58-62).

Komazaki solves this problem with a reset circuit 12 (Figs.3, 5) resetting the hold circuit 5B as long as the defect signal is being issued by a detecting circuit 11 (Col.5, lines 47-54). When the defect signal is at the L level [meaning no defect is detected], the switch SW is turned off. In this state, the bottom of the traverse signal is held. If a defect occurs in the playback signal, however, the level of the traverse signal abruptly drops as shown in FIG. 4, raising the defect signal to the H level which turns on the switch SW. With the switch SW turned on, electric charge accumulated in the capacitor C is discharged or the hold circuit 5B is reset and the traverse signal is no longer held. (Col.7, lines 3-9).

5 In short, Komazaki disclose a problem of generating an inaccurate mirror signal during and after a defect in the disc. Komazaki offer a solution to the problem by discharging a holding circuit throughout duration of a defect signal generated by a defect circuit. When a defect signal is present, the holding circuit is discharged. It is noted that the disclosed solution plays no part in the generation of the defect signal, which is independently generated by a detecting circuit 11 (Col.5, lines 47-54).

15 On the other hand, the present invention provides a method and device for accurately generating a defect signal during a period having a longer than normal disc defect. This is achieved through the use of a holding circuit that is activated during a defect, and the held signal is used in future comparisons which decide whether or not to continue generation of a defect signal. While no defect signal is present, the signal is not held by the holding circuit and the not-held signal is used for the comparisons determining whether or not to issue a defect signal. While the defect signal is present, the signal is held by the holding circuit and it is the constant, held signal that is used for the same comparisons. Using the held signal in the comparisons solves the present invention stated prior art problem of generating erroneous defect signals during a long defect ([0009], [0026]).

30 The difference between the device of Komazaki and that of the present invention can be best seen by example. The present invention stated prior art problem is that inaccurate defect signals are generated during a long defect

as shown in Fig.3 because the average of the SBAD gradually shadows the SBAD when the defect period is relatively longer than the time constant of the low-passed filter ([0009]). Holding the SBAD_LPF constant during the period of a defect
5 avoids the erroneous signals at T2, T3, and T4 because the shadowing effect has been avoided [0026].

Because Komazaki discharges the holding circuit upon reception of, and for the duration of a defect signal, the
10 reset and no-longer held signal will "drop abruptly" (Col.3, lines 16-21) when a defect signal is received. Thus, Komazaki's transverse signal shadowing of the playback signal is similar to the present invention's SBAD signal shadowing the un-held average of the SBAD signal (SBAD_LPF)
15 and fails to solve the stated prior art problem of erroneous signals at T2, T3, and T4 in Fig.3. The present invention does solve the stated prior art problem due to its distinct structure and functionality.

20 Komazaki does not only not solve the present invention stated prior art problem, but does not anticipate or suggest "holding the low-frequency signal when a difference between the reflected light intensity signal and the low-frequency signal is greater than a predetermined value" (Claim 1)
25 or "storing the low-frequency signal if a defect signal indicating existence of the disk defects appears based on a difference between the reflected light intensity signal and the low-frequency signal" (Claim 8). Komazaki does not hold or store the signal upon reception of a defect signal,
30 but instead functions by discharging any previously held value.

It is believed that the Examiner concurs with the Applicant that the cited references do not directly correspond to the present invention because the Examiner has stated that it would be obvious to use the teachings of Komazaki to modify the admitted prior art to obtain the present invention.

However, and without any limitation to the present invention implied, stated, or intended, but merely for the sake of discussion, suppose that the admitted prior art were to be modified by the addition of the holding and reset circuits disclosed by Komazaki (or visa versa). It has been pointed out that because the holding circuit is discharged upon and during reception of a defect signal, the modified art do not reproduce the same functionality as the present invention, including claimed functions (MPEP 2143.03).

Continuing with the hypothetical discussion, perhaps the Examiner is implying that the circuitry of Komazaki could easily be modified to meet the claimed functionality, for example to hold a received signal instead of discharging the holding circuit upon reception of a defect signal. This would be changing a principle of operation of a reference and make the modified reference unsatisfactory for its intended purpose because the modified disclosure of Komazaki would no longer generate the accurate mirror signals at which the disclosure is directed, and is therefore not considered obvious (MPEP 2143.01).

Without disclaimer of any kind, claim 15 has been amended to include the limitation of "a switch electrically disconnecting the low-pass filter from the reflected light

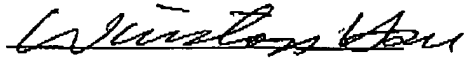
intensity signal when a difference between the reflected light intensity signal and the low-frequency signal is greater than the predetermined value". This limitation was previously present in original claim 16. No new material
5 has been introduced. Komazaki does not teach or suggest a switch disconnecting a low-pass filter from the inputted signal.

Additionally, please accept and consider new claims
10 18-20. Claim 18 depends upon claim 1 and includes the limitation of holding the held signal substantially constant throughout the duration of the defect signal ([0026]). Claims 19 and 20 depend upon claim 2 and claim
15 9 respectively and include the limitation of electrically disconnecting the capacitor from the reflected light intensity signal for the duration of the generated defect signal ([0025], Fig.5). No new material has been introduced. Komazaki does not teach or suggest these limitations.

20 As detailed above, the present invention discloses a novel method and device for generating accurate defect signals during a long defect period, a problem which known prior art does not address and does not solve. Because of its similarity to the structure and functionality of
25 Komazaki, it is noted that the additional Examiner cited reference Pat. No. 5,377,054 also differs from the present invention for many of the same reasons. Because of at least these structural and functional differences, and because the patentability of all dependent claims ultimately
30 depends upon the patentability of their parent claims, the Applicant respectfully requests reconsideration and allowance of claims 1-20.

Sincerely yours,

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9/30/2004

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